

CORRECTED VERSION

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
28 July 2005 (28.07.2005)

PCT

(10) International Publication Number
WO 2005/068271 A1

(51) International Patent Classification⁷: **B60T 8/00**

[SE/SE]; Bygdegatan 420, S-583 31 Linköping (SE).
SJÖSTRAND, Niclas [SE/SE]; Trumslagaregatan 38,
S-582 16 Linköping (SE). **DREVÖ, Markus** [SE/SE];
Abylundsgatan 54, S-582 36 Linköping (SE).

(21) International Application Number:
PCT/EP2004/000113

(74) Agents: **JACOBY, Georg** et al.; Samson & Partner,
Widenmayerstrasse 5, 80538 München (DE).

(22) International Filing Date: 9 January 2004 (09.01.2004)

(81) Designated States (unless otherwise indicated for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(25) Filing Language: English

(26) Publication Language: English

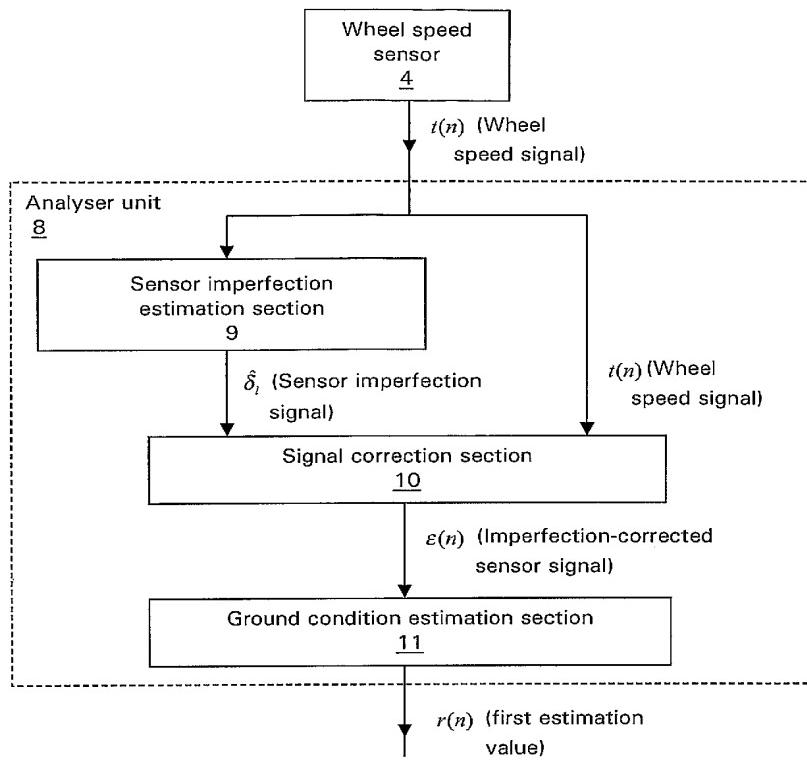
(71) Applicant (for all designated States except US): **NIRA DYNAMICS AB** [SE/SE]; Teknikringen 1F, S-583 30 Linköping (SE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **LINDSKOG, Peter**

[Continued on next page]

(54) Title: ESTIMATION OF THE ROAD CONDITION UNDER A VEHICLE



(57) Abstract: A system for estimating the ground condition under a driving vehicle, comprising: a wheel speed sensor (4) for sensing a wheel speed signal ($t(n)$, $\omega(n)$) which is indicative of the wheel speed of a vehicle's wheel driving over the ground (2,3) and a first analyser unit (8) coupled to said wheel speed sensor (4). The first analyser unit comprises a sensor imperfection estimation section (9) which is designed to estimate a sensor imperfection signal, formula (I), from the wheel speed signal ($t(n)$) which is indicative of the sensor imperfection of the wheel speed sensor (4); a signal correction section (10) which is designed to determine an imperfection-corrected sensor signal ($\epsilon(n)$) from the wheel speed signal ($t(n)$) and the sensor imperfection signal, formula (I); and a ground condition estimation section (11) which is designed to estimate a first estimation value ($r(n)$, $\alpha(n)$) indicative of the ground condition from the imperfection-corrected sensor signal ($\epsilon(n)$).



(84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

(48) **Date of publication of this corrected version:**

22 December 2005

(15) **Information about Correction:**

see PCT Gazette No. 51/2005 of 22 December 2005, Section II

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.